

**ADDENDUM 5 TO THE
INDOOR ENVIRONMENTAL QUALITY INVESTIGATION
FOR
GLENWOOD MIDDLE SCHOOL**

PREPARED FOR:

**HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLCOTT CITY, MD 21043**

PREPARED BY:



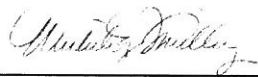
**ARIA ENVIRONMENTAL, INC.
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NOVEMBER 19, 2014 ✓

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**ADDENDUM 5 TO THE
INDOOR ENVIRONMENTAL QUALITY INVESTIGATION
FOR
GLENWOOD MIDDLE SCHOOL**

Reviewed by:



Michele M. Twilley, DrPH, CIH
Aria Environmental, Inc.

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EXECUTIVE SUMMARY

Aria Environmental, Inc. (AEI) was contracted by Howard County Public School System to perform an indoor environmental quality investigation of the Glenwood Middle School at the end of August 2013. A complaint was lodged by one of the teachers about high humidity, mold and adverse health effects experienced while she is in the school. AEI conducted interviews with Glenwood Middle School faculty, staff and administrators, Howard County Public School System facilities and building services personnel and Global Facilities Solutions (a mechanical engineering consultant). AEI also performed visual inspections of the classrooms, boiler room and crawlspace; made measurements for temperature, humidity, carbon monoxide, carbon dioxide, particulate matter and fungal identification and counting; and has attended meetings with HCPSS and Global Facilities Solutions. AEI performed additional air monitoring for the presence of mold spores at Glenwood Middle School on December 17, 2013, March 20, 2014, June 11, 2014, July 31, 2014 and October 20, 2014 and those results are reported in Addenda 1 - 4. HCPSS requested additional air monitoring for the presence of mold spores. This addendum report presents the results of air sampling for fungi and indoor air quality measurements for temperature, relative humidity, carbon monoxide and particulate matter made on October 20, 2014. Methods used in the investigation and background information are presented in the November 1, 2013 report.

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I. BACKGROUND

A representative from Aria Environmental, Inc. (AEI) visited Glenwood Middle School on October 20, 2014 to perform additional air monitoring in response to an ongoing indoor air quality complaint at the school. Indoor air samples were collected from classrooms 7, 11, 15, 20, 26, 29, Art Room 38, in the crawlspace accessed from the administrative work room and the crawlspace accessed from classroom 31. Outdoor air samples were also collected for comparison purposes in the two courtyards and near portable classroom 24. The background associated with the complaint is detailed in the Indoor Environmental Quality Investigation report dated November 1, 2013. This monitoring was performed as a follow up to previous improvements.

The school did not appear to be under the influence of strong negative pressure as evidenced by the ease of opening and closing doors to the outside. No measurements were made to determine pressurization of the school or air flow patterns. There was no evidence of mold growth observed in the classrooms. Weather on the day of monitoring was cool and sunny.

II. OBSERVATIONS AND MEASUREMENTS

A. Observations and Measurements on October 20, 2014

The room air temperature measured between 3:20 PM and 5:37 PM ranged from 70.6 to 73.4°F with an average of 71.6°F. The temperatures are considered acceptable for winter thermal comfort. The indoor relative humidity ranged from 39.0 to 44.3 percent. Results of temperature, relative humidity, carbon dioxide and carbon monoxide monitoring are presented in Table 2.

**Table 1- Acceptable Ranges of Temperature and
Relative Humidity in Summer and Winter^a**

Relative Humidity	Winter Temperature	Summer Temperature
30%	68.5°F – 76.0°F	74.0°F – 80°F
40%	68.5°F - 75.5°F	73.5°F – 79.5°F
50%	68.5°F - 74.5°F	73.0°F – 79.0°F
60%	68.0°F - 74.0°F	72.5°F – 78.0°F

^aadapted from ASHRAE Standard 55-2013

The outside temperature at 5:10 PM was 66.4°F and the outdoor relative humidity was 44.4%. No windows or doors were observed to be open during the monitoring period. The U.S. Environmental Protection Agency (EPA) recommends maintaining indoor relative humidity below 60% and ideally between 30 and 50%. The indoor humidity measurements were within the ranges recommended for thermal comfort. The school was on a winter heating schedule at the time of monitoring.

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build-up of carbon dioxide indicates inadequate ventilation. Air monitoring for carbon dioxide concentration could not be performed on October 20, 2014 due to an equipment malfunction. Carbon monoxide is mainly attributed to incomplete combustion. Concentrations of CO ranged from 1.7 to 2.6 ppm indoors and the outdoor concentration was 1.7 ppm. CO concentrations were below the ASHRAE concentration of concern of 9 ppm.

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Particulate matter or PM is the term for a mixture of solid particles and liquid droplets found in the air. It does not distinguish between the types of particles in the air (e.g., pollen, skin cells, mold spores, soil, etc.). Particulate matter includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers (PM 10) and "fine particles," with diameters that are 2.5 micrometers and smaller (PM 2.5). Particle loads expected to be a part of the school environment include carpet and clothing fiber, soil tracked from outside, paper dust, chalk dust, and dust and fibers from building materials. ASHRAE Standard 62.1-2013 suggests target indoor concentrations for PM 2.5 and PM 10 of 15 $\mu\text{g}/\text{m}^3$ and 50 $\mu\text{g}/\text{m}^3$, respectively. These concentrations are taken from the EPA's National Ambient Air Quality Standards (NAAQS) based on annual arithmetic means deemed acceptable for outdoor air quality. Occupational standards and guidelines for particles are nearly an order of magnitude higher than concentrations typically found in non-occupational settings and are not appropriate for comparison.

Particle measurements were taken with an Aerocet 531 particulate monitor. The particle monitor takes a two minute averaged sample of particle concentrations in 5 size fractions (PM 1, PM 2.5, PM 7, PM 10 and total suspended particles (TSP)). Results of particulate monitoring, presented in Table 2, revealed that PM 2.5 and PM 10 particle concentrations were well below the ASHRAE target concentrations in all areas monitored except for the PM 10 concentration in Art Room 38 (0.070 mg/m^3) where a custodian had swept approximately thirty minutes before the monitoring. A subsequent particle measurement two minutes after the original measurement (30 mg/m^3), showed a PM 10 concentration below the target PM 10 concentration.

The visual inspection of the rooms visited on October 20, 2014 did not reveal any obvious sources of water damage, moisture or mold growth. The mild chemical odor previously observed in Classroom 15 was still noticeable. There was no obvious source of this odor. Ventilators were operating in cooling mode in all classrooms. The crawlspace accessed in room 31 appeared damp and the crawlspace accessed in the Administrative workroom appeared dry.

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Table 2: Particle, Temperature, Relative Humidity, Carbon Dioxide and Carbon Monoxide Measurements Collected on October 20, 2014 at Glenwood Middle School

Location	Time	PM1 (mg/m ³)	PM2.5 (mg/m ³)	PM7 (mg/m ³)	PM10 (mg/m ³)	TSP (mg/m ³)	Temp (°F)	Rh (%)	CO (ppm)
Room 26	3:20 PM	0.000	0.000	0.002	0.002	0.007	73.4	39.4	1.7
Crawlspace (Rm 31)	3:44 PM	0.000	0.000	0.003	0.003	0.007	71.4	41.7	1.7
Room 29	3:54 PM	0.000	0.000	0.001	0.001	0.007	70.6	39.0	1.7
Room 38	4:08 PM	0.000	0.001	0.038	0.070	0.124	71.1	43.6	1.7
Room 38 (repeat)	4:12 PM	0.000	0.001	0.017	0.030	0.047	-	-	-
Room 15	4:18 PM	0.000	0.000	0.003	0.003	0.009	73.0	40.2	1.7
Room 20	4:34 PM	0.000	0.000	0.000	0.000	0.001	71.6	40.3	1.7
Room 11	4:45 PM	0.000	0.000	0.003	0.004	0.007	71.1	42.8	1.7
Room 7	4:56 PM	0.000	0.000	0.003	0.003	0.005	71.4	44.3	1.7
Outdoors near Portable Classroom 24	5:10 PM	0.000	0.000	0.005	0.006	0.010	66.4	44.4	1.7
Outdoors in Courtyard near Room 5	5:21 PM	0.000	0.000	0.003	0.004	0.010	65.6	47.5	1.7
Outdoors in Courtyard near Room 15	5:37 PM	0.000	0.000	0.003	0.006	0.015	64.6	49.0	2.6
Crawlspace (work room)	5:58 PM	0.000	0.002	0.020	0.030	0.045	70.9	56.2	2.6

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B. Air Monitoring for Fungal Identification and Counting on October 20, 2014

In the absence of visual sources of mold amplification and growth in the classrooms, non-viable spore trap samples were collected from eight classrooms (classrooms 7, 11, 15, 20, 26, 29, 31 and 38), two crawlspaces and three outdoor locations to determine whether there was a difference between mold spore loads inside the building versus outside. Classrooms 7, 15, 26, and 29 are complaint areas and classrooms 11, 20, 31 and 38 are non-complaint areas.

The spore trap samples were collected using AllergenCo-D cassettes attached to a sampling pump calibrated to 15 liter per minute (LPM) air flow. The samples were collected for a period of ten minutes, the time period recommended for spore trap sampling in a clean indoor environment. The spore trap samples were submitted to Aerobiology Laboratory for analysis. The sample results are reported as the spores per cubic meter of air (spores per m³) of hyphal fragments and total fungal spores. Depending upon the morphology of the spores, they were counted by their unique genus or were grouped into spores exhibiting common characteristics (e.g., *Penicillium*/*Aspergillus* group). Table 3 presents the results of the spore trap samples collected at Glenwood Middle School on October 20, 2014.

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Table 3: Results of Spore Trap Sampling in Selected Classrooms in Glenwood Middle School on October 20, 2014

Location	Outside near Portable 24	Outside near Room 5	Outside near Room 15	Room 26	Room 29	Room 38	Room 15	Room 20	Room 11	Room 7	Crawlspace In Rm 31	Crawlspace in Admin Rm
Spore Type	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³
Alternaria	40	67	133	-	-	13	-	-	7	-	7	13
Ascospores	373	373	400	7	27	20	20	53	113	93	-	-
Basidiospores	26,068	26,496	18,317	12,882	16,946	6,720	22,400	3,840	6,613	4,693	22,862	587
Botrytis	-	20	-	-	-	-	-	-	-	-	-	-
Cercospora	13	47	47	-	-	-	-	-	13	-	-	-
Cladosporium	2,347	307	3,413	100	747	3,947	1,493	207	1,200	1,093	2,773	373
Curvularia	20	7	27	7	-	20	-	-	-	-	-	13
Diplocladiella	-	7	-	-	-	-	-	-	-	-	-	-
Dreschlera/ Bipolaris	-	13	-	-	-	-	-	-	-	-	-	-
Epicoecum	53	120	167	-	13	53	-	-	-	-	-	-
Gliomastix	-	13	13	-	-	-	-	-	-	-	7	-
Hyphal Elements	173	220	293	13	20	220	73	27	40	27	47	73
Monochaetia	7	-	-	-	-	-	-	-	-	-	-	-
Mycro- enterolobium	7	-	-	-	-	-	-	-	-	-	-	-
Penicillium/ Aspergillus	967	1,427	800	6,235	3,517	2,453	1,600	587	407	367	14,548	4,587
Pestalotia	-	-	-	-	-	-	7	-	-	-	-	-
Pestalotiopsis	53	27	27	-	-	-	-	-	-	7	-	-
Pithomyces	20	47	40	-	7	20	7	-	7	-	7	13
Polythrincium	7	7	-	-	-	-	13	-	-	-	-	-
Pyricularia	13	-	7	-	-	-	-	-	7	-	-	-
Rusts	27	173	13	-	-	7	7	-	53	67	13	60

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Table 3: Results of Spore Trap Sampling in Selected Classrooms in Glenwood Middle School on October 20, 2014

Location	Outside near Portable 24	Outside near Room 5	Outside near Room 15	Room 26	Room 29	Room 38	Room 15	Room 20	Room 11	Room 7	Crawlspace In Rm 31	Crawlspace in Admin Rm
Spore Type	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³
Smuts, Periconia, myxomycetes	533	1,067	827	33	60	540	67	27	133	113	73	247
Spegazzinia	7	7	7	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	7	-	-	-	-	-	-
Torula	20	33	-	13	-	-	-	-	-	-	-	-
Unknown	13	13	27	-	-	-	7	-	-	-	-	-
Total Fungi	30,762	30,489	24,557	19,291	21,337	14,020	25,693	4,740	8,593	6,467	40,337	5,973

Bold numbers represent spore concentrations above the outdoor counts. Dashes designate none detected.

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Indoor spore counts, not including the crawlspace samples, ranged from 4,740 to 25,693 total spores per cubic meter of air (m³). All indoor samples had total spore counts lower than the outdoor samples. The crawlspace accessed from Room 31 had a total spore count higher than all three outdoor samples (40,337 spores per m³).

The presence of Penicillium/Aspergillus group spores was higher in six samples than outdoors: classrooms 15, 26, 29, 38 and the two crawlspace samples. Cladosporium spores were elevated above the outdoor sample count in the Room 38 sample. A custodian had swept approximately thirty minutes before sampling. Windows were not open during sampling. Pestalotia and Polythrincium spores were higher in Room 15 and Stachybotrys spores were higher in Room 38 than the outdoor samples but these counts were relatively low.

No secondary colonizers including Chaetomium or Stachybotrys were detected in the classrooms except for Stachybotrys in Room 38 (7 spores per m³). Hyphal elements were detected in all samples but all samples were lower than the outdoor sample hyphal element counts. Certificates of analysis are included as Attachment B.

Tables 4a-4d present the spores per cubic meter of air measured in classrooms 11, 15, 26 and 29 on October 18 and 28, 2013, December 17, 2013, March 20, 2014, June 11, July 31 and October 20, 2014. The tables show natural variability in the spore counts within the building.

Table 4a: Spore Concentrations on October 18, 2013, December 17, 2013, June 11, 2014, July 31, 2014 and October 20, 2014 at Glenwood Middle School in Classroom 11

Spores/m ³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types					
	CR11 10/18/13	CR11 12/17/13	CR11 03/20/14	CR11 06/11/14	CR11 07/31/14	CR11 10/20/14
Ascospores	7	33	20	1,333	320	113
Basidiospores	4,480	260	93	800	7,467	6,613
Cladosporium	333	73	133*	240	2,133	1,200
Penicillium/Aspergillus group	27	53	1,973*	20	133	407
Total	4,947	426	2,306	2,419	10,087	8,593

Bold represents spore concentrations that were higher than outdoors.

*Sampling occurred after custodian swept this classroom.

Table 4b: Spore Concentrations on October 18, 2013, October 28, 2013, December 17, 2013, June 11, 2014 and October 20, 2014 at Glenwood Middle School in Classroom 15

Spores/m ³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types						
	CR15 10/18/13	CR15 10/28/13	CR15 12/17/13	CR15 03/20/14	CR15 06/11/14	CR15 07/31/14	CR15 10/20/14
Ascospores	47	33	-	7	300	213	20
Basidiospores	12,373	620	127	20	2,720	1,947	22,400
Cladosporium	1,067	33	107	20	100	587	1,493
Penicillium/Aspergillus group	1,440	287	4,153	40	13	453	1,600
Total	15,055	1,013	4,413	87	3,147	3,267	25,693

Bold represents spore concentrations that were higher than outdoors.

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**Table 4c: Spore Concentrations on October 18, 2013, December 17, 2013,
March 20, 2014, June 11, 2014, July 31, 2014 and October 20, 2014
at Glenwood Middle School in Classroom 26**

Spores/m ³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types					
	CR26 10/18/13	CR26 12/17/13	CR26 03/20/14	CR26 06/11/14	CR26 07/31/14	CR26 10/20/14
Ascospores	20	67	-	1,493	20	7
Basidiospores	22,062	3,200	53	4,800	333	12,882
Cladosporium	720	4,267	13	227	27	100
Penicillium/Aspergillus group	80	1,600	27	107	320	6,235
Total	22,942	9,134	93	6,661*	720	19,291

Bold represents spore concentrations that were higher than outdoors.

*Sampling occurred after custodian swept this classroom.

**Table 4d: Spore Concentrations on October 18, 2013, October 28, 2013, December 17, 2013,
March 20, 2014, June 11, 2014, July 15, 2014 and October 20, 2014
at Glenwood Middle School in Classroom 29**

Spores/m ³	Classroom (CR) Number and Date of Spore Trap Sampling for Selected Spore Types					
	CR29 10/18/13	CR29 12/17/13	CR29 03/20/14	CR29 06/11/14	CR29 07/31/14	CR29 10/20/14
Ascospores	73	---	7	1,280	7	27
Basidiospores	3,627	67	173	3,520	87	16,946
Cladosporium	513	7	20	60	13	747
Penicillium/Aspergillus group	187	5,973	53	40	273	3,517
Total	4,447	6,054	253	4,914	400	21,337

Bold represents spore concentrations that were higher indoors than outdoors on the day of monitoring.

Table 5 presents a comparison of the outdoor spore concentrations for six days of monitoring for select spore types. The outdoor spore concentrations were within the range of expected concentrations for Maryland as reported by EMLab in their MoldRANGE tables. Variations in outdoor spore concentrations are a function of diurnal rhythms of spore release, weather-related factors (e.g., wind, rain, snow cover, temperature), and physical spatial factors.

**Table 5: Outdoor Spore Concentrations on October 18, 2013, October 28, 2013,
December 17, 2013, March 20, 2014, June 11, 2014, July 31, 2014 and October 20, 2014
at Glenwood Middle School**

Spores/m ³	10/18/13	10/28/13	12/17/13	03/20/14	06/11/14	07/31/14	10/20/14*
Ascospores	173	507	13	80	1,704	853	373-400
Basidiospores	13,845	2,880	3,413	2,107	29,819	32,735	18,317- 26,496
Cladosporium	5,120	107	40	127	3,627	1,493	307-3,413
Penicillium/Aspergillus group	80	140	313	53	20	260	800-1,427
Total	20,204	3,834	3,786	2,388	35,364	35,636	24,557- 30,762

* Three outdoor samples were collected on 10/20/14

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III. CONCLUSIONS AND RECOMMENDATIONS

Thermal comfort parameters of temperature and humidity were measured on October 20, 2014 and found to be within the comfort ranges established by ASHRAE. Carbon monoxide and particulate matter measurements were within acceptable ranges for good indoor air quality in all areas except for one particle measurement in Room 38 due to sweeping that occurred approximately thirty minutes before monitoring.

Indoor spore counts, not including the crawlspace samples, ranged from 4,740 to 25,693 total spores per cubic meter of air (m³). All indoor samples had total spore counts lower than the outdoor samples. The crawlspace accessed from Room 31 had a total spore count higher than all three outdoor samples (40,337 spores per m³).

Spore measurements collected in classrooms were generally acceptable compared to outdoor samples with outdoor total spore counts exceeding indoors. Indoor sample total spore counts were all lower than the outdoor sample except for one crawlspace sample. This crawlspace appeared damp. The presence of *Penicillium*/*Aspergillus* group spores was higher in six samples than outdoors: classrooms 15, 26, 29, 38 and the two crawlspace samples. *Cladosporium* spores were elevated above the outdoor sample count in the Room 38 sample. A custodian had swept approximately thirty minutes before sampling. Windows were not open during sampling. *Pestalotia* and *Polythrincium* spores were higher in Room 15 and *Stachybotrys* spores were higher in Room 38 than the outdoor samples but these counts were relatively low. Follow up air sampling should occur approximately quarterly in order to monitor changes in conditions that may be related to seasonal variations.

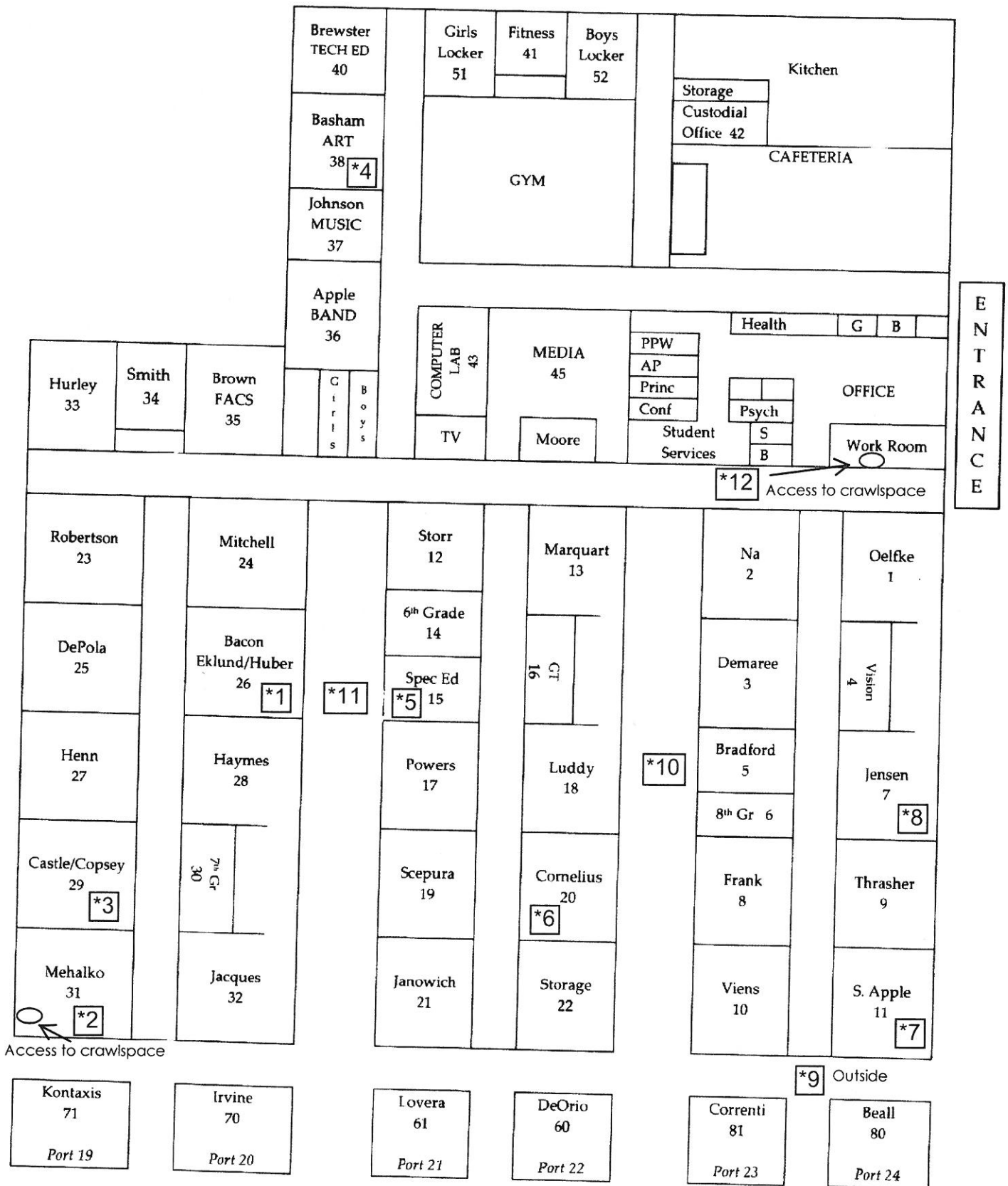
IV. LIMITATIONS

This report has been prepared for the exclusive use of the Howard County Public School System and/or their agents. This service has been performed in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations are based upon conditions readily visible at the site at the time of our site visit, and upon current industry standards. Destructive sampling was not performed as part of this survey. No observations were made behind solid walls, ceilings or in pipe chases that weren't already openly visible.

By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions (e.g. abatement, removal, etc.) initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

Attachment A:

Building Layout and Sample Location Plan for October 20, 2014



As of 8/02/13

Glenwood Middle School Floor Plan

Sample Location Plan
October 20, 2014



Attachment B:

**Report of Analysis and Chain of Custody Forms
October 20, 2014**

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **Glenwood MS J13-767**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 10/20/2014
Date Received: 10/22/2014
Date Analyzed: 10/22/2014
Date Reported: 10/23/2014
Project ID: 14022182
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1054 Spore Trap Analysis: SOP 3.8

Client Sample Number	102014-01				102014-09			
Sample Location	Room 26				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-001				14022182-009			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	6	40	<1	-
ascospores	1	7	<1	1/56	14	373	1	-
basidiospores	80	12882	67	1/2	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	15	100	1	1/23	44	2347	8	-
Curvularia	1	7	<1	1/3	3	20	<1	-
Diplocadiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	2	13	<1	1/13	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	39	6235	32	6/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	-	-	-	-	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	-	-	-	-	4	27	<1	-
Smuts,Periconia,Myxomycetes	5	33	<1	1/16	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	2	13	<1	1/2	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	145	19291	~100%	1/2	355	30762	~100%	-

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Client Sample Number	102014-02				102014-09			
Sample Location	Crawlspace (Rm 31)				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-002				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	1	7	<1	1/6	6	40	<1	-
ascospores	-	-	-	-	14	373	1	-
basidiospores	143	22862	57	1/1	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	26	2773	7	1/1	44	2347	8	-
Curvularia	-	-	-	-	3	20	<1	-
Diplocladiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	1	7	<1	1/8	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	7	47	<1	1/4	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	91	14548	36	15/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	1	7	<1	1/3	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	2	13	<1	1/2	4	27	<1	-
Smuts,Periconia,Myxomycetes	11	73	<1	1/7	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	283	40337	~100%	1/1	355	30762	~100%	-

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Client Sample Number	102014-03				102014-09			
Sample Location	Room 29				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-003				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	6	40	<1	-
ascospores	4	27	<1	1/14	14	373	1	-
basidiospores	106	16946	79	1/2	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	7	747	3	1/3	44	2347	8	-
Curvularia	-	-	-	-	3	20	<1	-
Diplocladiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	2	13	<1	1/4	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	3	20	<1	1/9	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	22	3517	16	4/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	1	7	<1	1/3	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	-	-	-	-	4	27	<1	-
Smuts,Periconia,Myxomycetes	9	60	<1	1/9	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	154	21337	~100%	1/1	355	30762	~100%	-

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Client Sample Number	102014-04				102014-09			
Sample Location	Room 38				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-004				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	2	13	<1	1/3	6	40	<1	-
ascospores	3	20	<1	1/19	14	373	1	-
basidiospores	63	6720	48	1/4	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	37	3947	28	2/1	44	2347	8	-
Curvularia	3	20	<1	1/1	3	20	<1	-
Diplocladiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	8	53	<1	1/1	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	33	220	2	1/1	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	23	2453	17	3/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	3	20	<1	1/1	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	1	7	<1	1/4	4	27	<1	-
Smuts,Periconia,Myxomycetes	81	540	4	1/1	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	1	7	<1	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 4				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments	Spore count may be under estimated due to heavy amount of particulate.				Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	258	14020	~100%	1/2	355	30762	~100%	-

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Client Sample Number	102014-05				102014-09			
Sample Location	Room 15				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-005				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	6	40	<1	-
ascospores	3	20	<1	1/19	14	373	1	-
basidiospores	210	22400	87	1/1	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	28	1493	6	1/2	44	2347	8	-
Curvularia	-	-	-	-	3	20	<1	-
Diplocladiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	11	73	<1	1/2	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	15	1600	6	2/1	145	967	3	-
Pestalotia	1	7	<1	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	1	7	<1	1/3	3	20	<1	-
Polythrincium	2	13	<1	2/1	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	1	7	<1	1/4	4	27	<1	-
Smuts,Periconia,Myxomycetes	10	67	<1	1/8	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	1	7	<1	1/2	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	283	25693	~100%	1/1	355	30762	~100%	-

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Client Sample Number	102014-06				102014-09			
Sample Location	Room 20				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-006				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	6	40	<1	-
ascospores	8	53	1	1/7	14	373	1	-
basidiospores	72	3840	81	1/7	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	31	207	4	1/11	44	2347	8	-
Curvularia	-	-	-	-	3	20	<1	-
Diplocadiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	4	27	1	1/7	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	11	587	12	1/2	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	-	-	-	-	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	-	-	-	-	4	27	<1	-
Smuts, Periconia, Myxomycetes	4	27	1	1/20	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 2				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	130	4740	~100%	1/6	355	30762	~100%	-

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Client Sample Number	102014-07				102014-09			
Sample Location	Room 11				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-007				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	1	7	<1	1/6	6	40	<1	-
ascospores	17	113	1	1/3	14	373	1	-
basidiospores	62	6613	77	1/4	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	2	13	<1	1/1	2	13	<1	-
Cladosporium	45	1200	14	1/2	44	2347	8	-
Curvularia	-	-	-	-	3	20	<1	-
Diplocladiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	8	53	<1	-
Gliomastix	-	-	-	-	-	-	-	-
hyphal elements	6	40	<1	1/4	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	61	407	5	1/2	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	1	7	<1	1/3	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	1	7	<1	1/2	2	13	<1	-
Rusts	8	53	1	2/1	4	27	<1	-
Smuts, Periconia, Myxomycetes	20	133	2	1/4	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	224	8593	~100%	1/4	355	30762	~100%	-

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Client Sample Number	102014-08				102014-09			
Sample Location	Room 7				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-008				14022182-009			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	6	40	<1	-
ascospores	14	93	1	1/4	14	373	1	-
basidiospores	44	4693	73	1/6	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	41	1093	17	1/2	44	2347	8	-
Curvularia	-	-	-	-	3	20	<1	-
Diplocadiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	8	53	<1	-
Gliomastix	1	7	<1	-	-	-	-	-
hyphal elements	4	27	<1	1/7	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	55	367	6	1/3	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	1	7	<1	1/8	8	53	<1	-
Pithomyces	-	-	-	-	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	10	67	1	3/1	4	27	<1	-
Smuts,Periconia,Myxomycetes	17	113	2	1/5	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	187	6467	~100%	1/5	355	30762	~100%	-

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Client Sample Number	102014-10				102014-09			
Sample Location	Outside Courtyard Near Rm 5				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-010				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	10	67	<1	2/1	6	40	<1	-
ascospores	14	373	1	1/1	14	373	1	-
basidiospores	62	26496	87	1/1	61	26068	85	-
Botrytis	3	20	<1	-	-	-	-	-
Cercospora	7	47	<1	4/1	2	13	<1	-
Cladosporium	46	307	1	1/8	44	2347	8	-
Curvularia	1	7	<1	1/3	3	20	<1	-
Diplocladiella	1	7	<1	-	-	-	-	-
Drechslera/Bipolaris group	2	13	<1	-	-	-	-	-
Epicoccum	18	120	<1	2/1	8	53	<1	-
Gliomastix	2	13	<1	-	-	-	-	-
hyphal elements	33	220	1	1/1	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	214	1427	5	1/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	4	27	<1	1/2	8	53	<1	-
Pithomyces	7	47	<1	2/1	3	20	<1	-
Polythrincium	1	7	<1	1/1	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	26	173	1	6/1	4	27	<1	-
Smuts,Periconia,Myxomycetes	40	1067	3	2/1	20	533	2	-
Spegazzinia	1	7	<1	1/1	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	5	33	<1	2/1	3	20	<1	-
Unknown	2	13	<1	1/1	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments	Few algae seen.				Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	499	30489	~100%	1/1	355	30762	~100%	-

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Client Sample Number	102014-11				102014-09			
Sample Location	Outside Courtyard Near Rm 15				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-011				14022182-009			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	20	133	1	3/1	6	40	<1	-
ascospores	15	400	2	1/1	14	373	1	-
basidiospores	86	18317	75	1/1	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	7	47	<1	4/1	2	13	<1	-
Cladosporium	64	3413	14	1/1	44	2347	8	-
Curvularia	4	27	<1	1/1	3	20	<1	-
Diplocadiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	25	167	1	3/1	8	53	<1	-
Gliomastix	2	13	<1	-	-	-	-	-
hyphal elements	44	293	1	2/1	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	120	800	3	1/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	4	27	<1	1/2	8	53	<1	-
Pithomyces	6	40	<1	2/1	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	1	7	<1	1/2	2	13	<1	-
Rusts	2	13	<1	1/2	4	27	<1	-
Smuts,Periconia,Myxomycetes	31	827	3	2/1	20	533	2	-
Spegazzinia	1	7	<1	1/1	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	4	27	<1	2/1	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments					Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	436	24557	~100%	1/1	355	30762	~100%	-

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **Glenwood MS J13-767**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 10/20/2014
Date Received: 10/22/2014
Date Analyzed: 10/22/2014
Date Reported: 10/23/2014
Project ID: 14022182
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Client Sample Number	102014-12				102014-09			
Sample Location	Crawlspace (Admin)				Outside Near Portable 24			
Sample Volume (L)	150				150			
Lab Sample Number	14022182-012				14022182-009			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	2	13	<1	1/3	6	40	<1	-
ascospores	-	-	-	-	14	373	1	-
basidiospores	22	587	10	1/44	61	26068	85	-
Botrytis	-	-	-	-	-	-	-	-
Cercospora	-	-	-	-	2	13	<1	-
Cladosporium	14	373	6	1/6	44	2347	8	-
Curvularia	2	13	<1	1/2	3	20	<1	-
Diplocladiella	-	-	-	-	-	-	-	-
Drechslera/Bipolaris group	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	8	53	<1	-
Gliomastix	1	7	<1	-	-	-	-	-
hyphal elements	11	73	1	1/2	26	173	1	-
Monochaetia	-	-	-	-	1	7	<1	-
Mycoenterolobium	-	-	-	-	1	7	<1	-
Penicillium/Aspergillus group	172	4587	77	5/1	145	967	3	-
Pestalotia	-	-	-	-	-	-	-	-
Pestalotiopsis	-	-	-	-	8	53	<1	-
Pithomyces	2	13	<1	1/2	3	20	<1	-
Polythrincium	-	-	-	-	1	7	<1	-
Pyricularia	-	-	-	-	2	13	<1	-
Rusts	9	60	1	2/1	4	27	<1	-
Smuts, Periconia, Myxomycetes	37	247	4	1/2	20	533	2	-
Spegazzinia	-	-	-	-	1	7	<1	-
Stachybotrys	-	-	-	-	-	-	-	-
Torula	-	-	-	-	3	20	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 4				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments	Large amount of particulate seen.				Occ Pen. Conidiospore. Few algae seen.			
Total *See Footnotes	272	5973	~100%	1/5	355	30762	~100%	-

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Condition of Sample(s) Upon Receipt: Acceptable

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Date Analyzed: 10/22/2014
Date Reported: 10/23/2014
Project ID: 14022182
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Footnotes and Additional Report Information

Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The Smut, Periconia, Myxomycete group is composed of three different groups whose spores have similar morphologies. Smuts are plant pathogens, Periconia is a relatively uncommon mold indoors, and Myxomycetes are not fungi but slime molds. Although these organisms do not typically proliferate indoors, their spores are potentially allergenic.

5. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

6. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

7. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

8. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.

9. Due to rounding totals may not equal 100%.

10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. Analysis conducted on non-viable spore traps is completed using Indoor Environmental Standards Organization (IESO) Standard 2210.

13. The results in this report are related to this project and these samples only.

14. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should be considered (3) three. For example, a sample with a result of 55,443 spr/m³ from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400 spr/m³.

15. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

Suzanne S. Blevins

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